

Abstract (600 word limits)

Breast cancer is the most common malignancy in women worldwide and the leading cause of cancer death in developing countries. Anthracyclines (e.g. Doxorubicin) appear to be the most potent therapy for hormone refractory breast cancer, however, the cardiotoxic side-effects limit survival by 20-30%, particularly after co-treatment with Doxorubicin and Trastuzumab. Discovery of better therapeutic strategies to circumvent treatment-induced cardiac morbidities remain a challenge, largely due to the heterogeneity and genetic diversity of human breast cancers as well as lack of model systems that truly mimic the human disease phenotype. To address this, we have successfully developed the first ever induced pluripotent stem cells (iPSCs) from peripheral blood mononuclear cells (PBMCs) of Estrogen Receptor positive breast cancer patients of Indian descent. These cells are truly pluripotent (express SSEA4, Tra1-60, Tra1-81, Oct4, Nanog etc.) and show an ability to differentiate into cells of all three germ layers. Furthermore, we have successfully differentiated these human breast cancer (and -age, -gender matched healthy control) iPSCs into mature and functional beating cardiomyocytes that express markers of mature cardiac cells, such as, Troponin T, Nkx2-5 at an average efficiency of $\geq 85\%$ by flowcytometry. Notably, these iPSC-derived cardiomyocytes retain the genetic profile of the source patient(s) and show increased doxorubicin induced cytotoxicity compared to their healthy counterparts, underscoring their potential for disease modeling. We propose the use of these cancer patient-derived cardiac cells for preclinical drug screening for chemotherapeutic drugs alongside cardioprotective agents to identify novel combinatorial treatment regimen(s) for circumventing doxorubicin-induced cardiotoxicity in breast cancer patients.

Biography (200 word limit)

Dr. Bhatt did PhD in Breast Cancer from University of Illinois-Urbana Champaign, USA and postdoctoral studies from Harvard University, USA. She was bestowed with Mary K. Iacocca research accolade through her nomination by Harvard University for distinguished scientific achievements. She has been awarded scientific fundings both in USA and India. She is currently serving as Chief Scientific Officer with a leading Biotechnology Company, Yashraj Biotechnology Limited), involved in cancer drug discovery research and diagnostics. She has published more than 25 papers in peer-reviewed international scientific journals, editorials and meeting abstracts and has served on the editorial board of some of these journals of high international repute.

References (With Hyperlink)

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